



August 14, 2017

Tom Moe USS Corporation P.O. Box 417 8771 Park Ridge Dr Mountain Iron, MN 55768

RE: Project: Toxicity

Pace Project No.: 1289760

#### Dear Tom Moe:

Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan J Toms dan.toms@pacelabs.com (218) 727-6380 Project Manager

Enclosures







# **CERTIFICATIONS**

Project: Toxicity
Pace Project No.: 1289760

**Duluth Minnesota Cerification ID's** 

4730 Oneota St., Duluth, MN 55807 Minnesota Dept of Health Certification #: 1252596 Nevada DCNR Certification #: MN000372017-1 Montana DHHS Certification #: CERT0102 Wisconsin DNR Certification #: 999446800 North Dakota Certification #: R-105



# **SAMPLE SUMMARY**

Project: Toxicity
Pace Project No.: 1289760

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289760001	WS006 / WS007	Water	06/21/17 09:40	06/21/17 16:15
1289760002	SW002 Receiving Water	Water	06/21/17 08:45	06/21/17 16:15



# **SAMPLE ANALYTE COUNT**

Project: Toxicity
Pace Project No.: 1289760

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289760001	WS006 / WS007	EPA 120.1 (1982)	AXP	1	PASI-DUL
		SM 2320B (1997)	KJD	1	PASI-DUL
		SM 4500-CL E (2000 & 2011)	DJT	1	PASI-DUL
		SM 4500-H+B (1996)	APR	1	PASI-DUL
		SM 4500-NH3 D (1997)	AXP	1	PASI-DUL
		USGS I-1338-85 (1985)	KJD	1	PASI-DUL
1289760002	SW002 Receiving Water	EPA 120.1 (1982)	AXP	1	PASI-DUL
		SM 2320B (1997)	KJD	1	PASI-DUL
		SM 4500-CL E (2000 & 2011)	DJT	1	PASI-DUL
		SM 4500-H+B (1996)	APR	1	PASI-DUL
		SM 4500-NH3 D (1997)	AXP	1	PASI-DUL
		USGS I-1338-85 (1985)	KJD	1	PASI-DUL



# **ANALYTICAL RESULTS**

Project: Toxicity
Pace Project No.: 1289760

Date: 08/14/2017 01:52 PM

Sample: WS006 / WS007	Lab ID: 128	39760001	Collected: 06/21/1	7 09:40	Received: 0	6/21/17 16:15 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance	Analytical Met	hod: EPA 120	0.1 (1982)					
Specific Conductance	2130	umhos/cm	1.0	1		06/30/17 15:09		
2320B Alkalinity	Analytical Met	hod: SM 2320	OB (1997)					
Alkalinity, Total as CaCO3	204	mg/L	20.0	1		06/22/17 12:01		
4500CL E Chlorine, Residual	Analytical Met	hod: SM 4500	O-CL E (2000 & 201	1)				
Chlorine, Total Residual	<0.020	mg/L	0.020	1		06/21/17 16:47	7782-50-5	H6
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500	D-H+B (1996)					
pH at 25 Degrees C	8.0	Std. Units	0.10	1		06/21/17 17:11		H6
4500 Ammonia Water	Analytical Met	hod: SM 4500	D-NH3 D (1997)					
Nitrogen, Ammonia	1.5	mg/L	0.20	1		06/30/17 12:11	7664-41-7	
USGS Hardness, Total as CaCO3	Analytical Met	hod: USGS I-	1338-85 (1985)					
Total Hardness	1090	mg/L	5.0	1		06/24/17 13:47		
Sample: SW002 Receiving Water	Lab ID: 128	39760002	Collected: 06/21/1	7 08:45	Received: 0	6/21/17 16:15 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance	Analytical Met	hod: EPA 120	.1 (1982)					
Specific Conductance	76.5	umhos/cm	1.0	1		06/30/17 15:10		
2320B Alkalinity	Analytical Met	hod: SM 2320	OB (1997)					
Alkalinity, Total as CaCO3	31.3	mg/L	20.0	1		06/22/17 12:07		
4500CL E Chlorine, Residual	Analytical Met	hod: SM 4500	O-CL E (2000 & 201	1)				
Chlorine, Total Residual	<0.020	mg/L	0.020	1		06/21/17 16:50	7782-50-5	H6
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500	)-H+B (1996)					
pH at 25 Degrees C	6.7	Std. Units	0.10	1		06/21/17 17:13		H6
4500 Ammonia Water	Analytical Met	hod: SM 4500	D-NH3 D (1997)					
Nitrogen, Ammonia	<0.20	mg/L	0.20	1		06/30/17 12:18	7664-41-7	
USGS Hardness, Total as CaCO3	Analytical Met	hod: USGS I-	1338-85 (1985)					
Total Hardness	46.0	mg/L	5.0	1		06/24/17 13:50		
		9, ⊏	0.0	•		35,2 ., 17 10.00		



#### **QUALITY CONTROL DATA**

Project: Toxicity Pace Project No.: 1289760

QC Batch:

118124

467590

Analysis Method: Analysis Description: EPA 120.1 (1982)

QC Batch Method: EPA 120.1 (1982)

1289760001, 1289760002

Matrix: Water

Associated Lab Samples:

METHOD BLANK:

Associated Lab Samples:

1289760001, 1289760002

Blank Result

1410

Reporting

Parameter

Units

Limit

Analyzed

120.1 Specific Conductance

Qualifiers

Specific Conductance

Specific Conductance

umhos/cm

umhos/cm

umhos/cm

<1.0

1.0 06/30/17 15:01

LABORATORY CONTROL SAMPLE: 467589

Parameter

Spike Units Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 467591

Parameter

1289988001 Result

Max

10

10

90-110

Specific Conductance

Units umhos/cm

290

2130

Result 289

Dup

1370

**RPD** 

97

**RPD** 

0

0

Qualifiers

SAMPLE DUPLICATE:

Specific Conductance

Date: 08/14/2017 01:52 PM

467592

Parameter Units 1289760001 Result

Dup Result

2130

RPD

Max RPD

Qualifiers

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Toxicity

SAMPLE DUPLICATE: 463444

Date: 08/14/2017 01:52 PM

Project:

#### **QUALITY CONTROL DATA**

Pace Project No.: 1289760 QC Batch: 117226 Analysis Method: SM 2320B (1997) QC Batch Method: SM 2320B (1997) Analysis Description: 2320B Alkalinity Associated Lab Samples: 1289760001, 1289760002 METHOD BLANK: 463443 Matrix: Water Associated Lab Samples: 1289760001, 1289760002 Blank Reporting Limit Parameter Result Analyzed Qualifiers Units Alkalinity, Total as CaCO3 mg/L <20.0 20.0 06/22/17 10:56 LABORATORY CONTROL SAMPLE: 463442 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Alkalinity, Total as CaCO3 mg/L 50 46.5 93 90-110

Parameter	Units	1289260005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	246	252	2	10	
SAMPLE DUPLICATE: 463445						
		1289720001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	47.5	47.5		10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Toxicity

SAMPLE DUPLICATE: 463888

Chlorine, Total Residual

Date: 08/14/2017 01:52 PM

Parameter

Project:

#### **QUALITY CONTROL DATA**

Pace Project No.: 1289760 QC Batch: 117330 Analysis Method: SM 4500-CL E (2000 & 2011) QC Batch Method: SM 4500-CL E (2000 & 2011) Analysis Description: 4500CL E Chlorine, Total Residual Associated Lab Samples: 1289760001, 1289760002 METHOD BLANK: 463887 Matrix: Water Associated Lab Samples: 1289760001, 1289760002 Blank Reporting Limit Parameter Result Qualifiers Units Analyzed Chlorine, Total Residual < 0.020 0.020 06/21/17 16:45 H6 mg/L LABORATORY CONTROL SAMPLE: 463886 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chlorine, Total Residual mg/L 0.090 90 80-120 H6

Dup

Result

< 0.020

**RPD** 

Max

**RPD** 

Qualifiers

20 H6

1289760001

Result

< 0.020

Units

mg/L

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



#### **QUALITY CONTROL DATA**

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 117190

QC Batch Method: SM 4500-H+B (1996)

Analysis Method:

SM 4500-H+B (1996)

Analysis Description: 4500H+B pH Electrometric

Associated Lab Samples: 1289760001, 1289760002

LABORATORY CONTROL SAMPLE: 463295

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Std. Units 7 98-102 H6 pH at 25 Degrees C 7.0 100

SAMPLE DUPLICATE: 463296

Date: 08/14/2017 01:52 PM

1289988002 Dup Max RPD RPD Parameter Units Result Result Qualifiers pH at 25 Degrees C Std. Units 7.9 7.9 1 10 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



#### **QUALITY CONTROL DATA**

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 118028 Analysis Method: SM 4500-NH3 D (1997)

QC Batch Method: SM 4500-NH3 D (1997) Analysis Description: 4500 Ammonia

Associated Lab Samples: 1289760001, 1289760002

METHOD BLANK: 467273 Matrix: Water

Associated Lab Samples: 1289760001, 1289760002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Nitrogen, Ammonia mg/L <0.20 0.20 06/30/17 10:45

LABORATORY CONTROL SAMPLE: 467272

Date: 08/14/2017 01:52 PM

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Nitrogen, Ammonia mg/L 2 1.8 91 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 467274 467275

MS MSD 1289988001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 2 2 2.1 2.2 102 90-110 6 Nitrogen, Ammonia mg/L < 0.20 108 10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 467276 467277

MS MSD 1289719003 MS MSD MS MSD Spike Spike % Rec Max Parameter % Rec RPD Units Result Conc. Conc. Result Result % Rec Limits RPD Qual 2 2 1.9 Nitrogen, Ammonia mg/L < 0.25 2.0 91 97 90-110 6 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Toxicity

Parameter

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

**Total Hardness** 

Date: 08/14/2017 01:52 PM

Project:

#### **QUALITY CONTROL DATA**

Pace Project No.: 1289760 QC Batch: 117490 Analysis Method: USGS I-1338-85 (1985) QC Batch Method: USGS I-1338-85 (1985) Analysis Description: USGS T Hardness as CaCO3 Associated Lab Samples: 1289760001, 1289760002 METHOD BLANK: 464575 Matrix: Water Associated Lab Samples: 1289760001, 1289760002 Blank Reporting Parameter Result Limit Analyzed Qualifiers Units **Total Hardness** <5.0 5.0 06/24/17 11:08 mg/L LABORATORY CONTROL SAMPLE: 464576

LCS

Result

103

464580

LCS

% Rec

103

% Rec

Limits

90-110

Qualifiers

Spike

Conc.

100

Units

mg/L

464579

MS MSD 1289639002 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual **Total Hardness** 200 320 mg/L 116 200 316 102 100 90-110 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



#### **QUALIFIERS**

Project: Toxicity
Pace Project No.: 1289760

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

#### **LABORATORIES**

PASI-DUL Pace Analytical Services - Duluth

#### **ANALYTE QUALIFIERS**

Date: 08/14/2017 01:52 PM

H6 Analysis initiated outside of the 15 minute EPA required holding time.



# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Toxicity
Pace Project No.: 1289760

Date: 08/14/2017 01:52 PM

_ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
1289760001	WS006 / WS007	EPA 120.1 (1982)	118124		•
1289760002	SW002 Receiving Water	EPA 120.1 (1982)	118124		
1289760001	WS006 / WS007	SM 2320B (1997)	117226		
1289760002	SW002 Receiving Water	SM 2320B (1997)	117226		
1289760001	WS006 / WS007	SM 4500-CL E (2000 & 2011)	117330		
289760002	SW002 Receiving Water	SM 4500-CL E (2000 & 2011)	117330		
289760001	WS006 / WS007	SM 4500-H+B (1996)	117190		
289760002	SW002 Receiving Water	SM 4500-H+B (1996)	117190		
289760001	WS006 / WS007	SM 4500-NH3 D (1997)	118028		
289760002	SW002 Receiving Water	SM 4500-NH3 D (1997)	118028		
289760001	WS006 / WS007	USGS I-1338-85 (1985)	117490		
289760002	SW002 Receiving Water	USGS I-1338-85 (1985)	117490		

Pace Analytical

# WO#:1289760

CHAIN-OF-CUSTODY / Analytical Request I The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields m

CLIENT: USS CORP

PM: DJT

Due Date: 07/12/17

						12	2	10	9	œ	7	o	Oi	4	ယ	_	ITEM#			Request		Email To	Address:	Compan	Require	Section A
					ADDITIONAL COMMENTS										SW002 Receiving Water	WS006 / WS007	SAMPLE ID  SAMPLE ID  Solution  Character per box.  (A-Z, 0-9 / , -)  Sample ids must be unique  Office in the property of the			Prone: 218.749.7485   rax 210.749.7300	019 740 7495				Required Client Information:	Þ
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	Received on Ice (Y/N)			~	SAMPLE (															נע	ion		encv			
	Custody Seale Cooler (Y/N)	d		~	SAMPLE CONDITIONS																					
	Samples Intact			~	Ś			1					1				1					۱				

Samples Intact (Y/N)

# Pace Analytical

hold, incorrect preservative, out of temp, incorrect containers)

### Document Name: Sample Condition Upon Receipt Form

Document No.:

Document Revised: 17Apr2017 Page 1 of 1

Issuing Authority:

F-DUL-C-001-rev.04

Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt  (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		Project #	WO#:1289760
Courier: Fed Ex UPS  Commercial Pace	USPS Other:	Client	PM: DJT Due Date: 07/12/17 CLIENT: USS CORP
Tracking Number:			
stody Seal on Cooler/Box Present? Yes N	lo <b>Seals Inta</b>	ct? Yes	No Optional: Proj. Due Date: Proj. Name:
cking Material: Bubble Wrap Bubble Ba	gs None	Other:_	Temp Blank? Yes No
nermometer Used: 🔲 IR-1 🔲 161014660	Type of Ice:	<b>∑</b> Wet [	Blue None Samples on ice, cooling process has begu
Cooler Temp Read °C: 2.017.0 Cooler Temp Co	orrected °C:	.511.5	Biological Tissue Frozen? Yes No No
emp should be above freezing to 6°C Correction Factor	or: -0.5	Date and	Initials of Person Examining Contents: KH 6121117
temperature is $\leq 0^{\circ}$ C, is there evidence of ice formation		No NA	
temperature is 20° e, is there exidence or necromation			Comments:
Chain of Custody Present?	Yes	No DN/A	1.
Chain of Custody Filled Out?	Yes	No No	2.
Chain of Custody Relinquished?	Yes	No No	3.
Sampler Name and Signature on COC?	Yes	No No	4.
Samples Arrived within Hold Time?	Yes	No N/A	5. If Fecal:<8 hours >8, <24 hours >24 hours
Short Hold Time Analysis (<72 hr)?	Yes	No N/A	6. pH, Res (1
Rush Turn Around Time Requested?	Yes	No N/A	7.
Sufficient Volume?	Yes	No N/A	8.
Correct Containers Used?	Yes	No N/A	9.
-Pace Containers Used?	Yes	No N/A	
Containers Intact?	Yes	No N/A	10.
Filtered Volume Received for Dissolved Tests?	Yes	No N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	Yes	No N/A	12.
-Includes Date/Time/ID/Analysis Matrix: Ut All containers needing acid/base preservation will be checked and documented in the pH logbook.	Yes	]No □N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	Yes	No No	13.
Headspace in VOA Vials ( >6mm)?	Yes	No N/A	14.
Trip Blank Present?	Yes	No N/A	15.
Trip Blank Custody Seals Present?	Yes	No IN/A	
Pace Trip Blank Lot # (if purchased):			
CLIENT NOTIFICATION/RESOLUTION  Person Contacted: Ton Mot	0		Field Data Required? $\square$ Yes $\square$ No Date/Time: $8-7-17 \bigcirc 10.03 $ $9.m$
Comments/Resolution: Sert an e	e-mail	to Tor	n inquiring about a
urchase Order Number	For	this A	project - walting for a reply APS-
Received an e-mail from ?	om to	арру	n inquiring about a project - waiting for a replyAP8- USS PO#20475903 for the Char AP 8-7-17
FECAL WAIVER ON FILE Y N  Project Manager Review:  Output: Whenever there is a discrepancy affecting North Carolina (1975).	r D	5T	IRE WAIVER ON FILE Y N  Date: 6-22-1  this form will be sent to the North Carolina DEHNR Certification Office (i.e. or